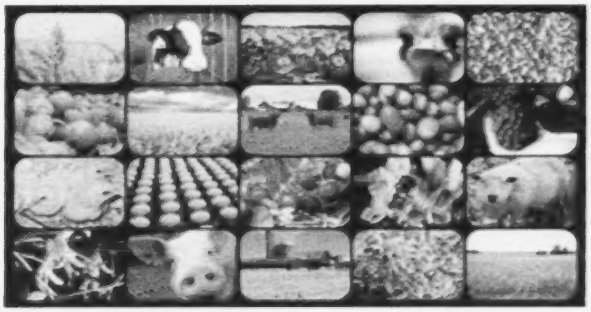
Catalogue no. 95-640-X

Growing opportunity through innovation in agriculture



Release date: June 21, 2017

Statistics Canada Statistique Canada

Canada

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website, www.statcan.gc.ca.

You can also contact us by

email at STATCAN.infostats-infostats.STATCAN@canada.ca

telephone, from Monday to Friday, 8:30 a.m. to 4:30 p.m., at the following numbers:

- Statistical Information Service 1-800-263-1136
- National telecommunications device for the hearing impaired 1-800-363-7629
- Fax line 1-514-283-9350

Depository Services Program

- Inquiries line 1-800-635-7943
- Fax line 1-800-565-7757

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "Contact us" > "Standards of service to the public."

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Standard table symbols

The following symbols are used in Statistics Canada publications:

. not available for any reference period
.. not available for a specific reference period
... not applicable
0 true zero or a value rounded to zero
0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p} preliminary
^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E} use with caution
F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

Published by authority of the Minister responsible for Statistics Canada

© Minister of Industry, 2017

All rights reserved. Use of this publication is governed by the Statistics Canada Open Licence Agreement.

An HTML version **is also available.**

Cette publication est aussi disponible en français.

Growing opportunity through innovation in agriculture

Farming is an increasingly complex business. As the agricultural industry continues to evolve, farms are adapting their business model to take advantage of new opportunities in the market. Innovation through marketing strategies, processes and product offerings are allowing farms to exploit new revenue streams and cut costs.

While traditional markets continue to dominate the industry, farms are adapting their marketing strategies by adopting practices like direct marketing and organic certification. To be more innovative, farmers are using data, technologies, equipment and practices to improve efficiency and maximize profit. Farmers have more tools at their disposal for decision-making and production as technology in the sector continues to advance. Data-driven technologies, such as GPS and GIS soil mapping, are enabling farms to achieve increased precision and accuracy in seeding, harvesting and input use. At the same time, technologies in the greenhouse and livestock sectors are advancing the world of farm automation at the push of a button.

From farm to fork: cutting out the middleman

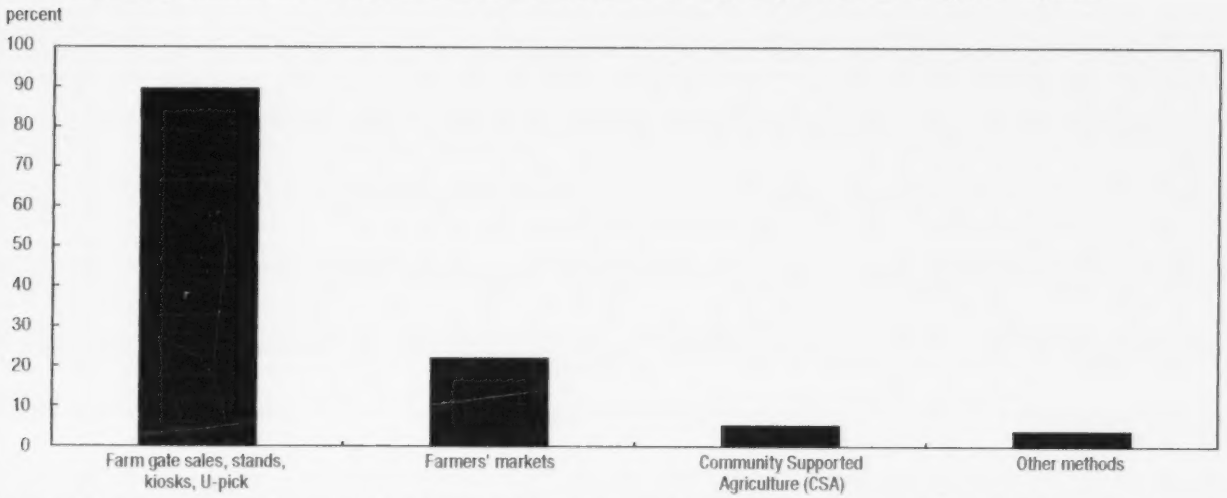
Farmers have always had to figure out how best to market their products. They leverage integration, economies of scale and commodity concentration to build marketing channels through contracts, storage facilities and processing plants. While these practices continue to be the backbone of agricultural market access, some farms are tapping into different types of markets. Direct marketing, which connects farmers directly with consumers, was a practice measured as part of the 2016 Census of Agriculture.

What is direct marketing?

Direct marketing is the practice through which farms sell agricultural products directly to consumers for human consumption. Farms can sell unprocessed products, such as fruits, vegetables, meat cuts, poultry, eggs, maple syrup, and honey, or value-added products, such as jellies, sausages, wine, and cheese. There are also several methods through which farms can practise direct marketing, some of which include farm gate sales, stands, kiosks, U-pick, farmers' markets, and Community Supported Agriculture (CSA).

In Canada, 12.7% of all farms reported direct marketing. Of the 24,510 farms that sold directly to consumers, 96.1% sold unprocessed food products like fruits and eggs, and 14.4% sold value-added products like wine and cheese. The most commonly reported methods of direct marketing were farm gate sales, stands, kiosks, or U-pick, which accounted for 89.4% of farms reporting. Farmers' markets were reported by 22.0% of those with direct marketing, while 5.2% used Community Supported Agriculture (CSA) initiatives and 3.8% used other methods (Chart 1).

Chart 1
Direct marketing methods used as a percent of agricultural operations reporting direct marketing, Canada, 2015



Note: As agricultural operations can sell both unprocessed and value-added products through multiple methods, the sum of the product types or methods reported can be more than the total agricultural operations reporting direct marketing.
Source: Census of Agriculture (3438).

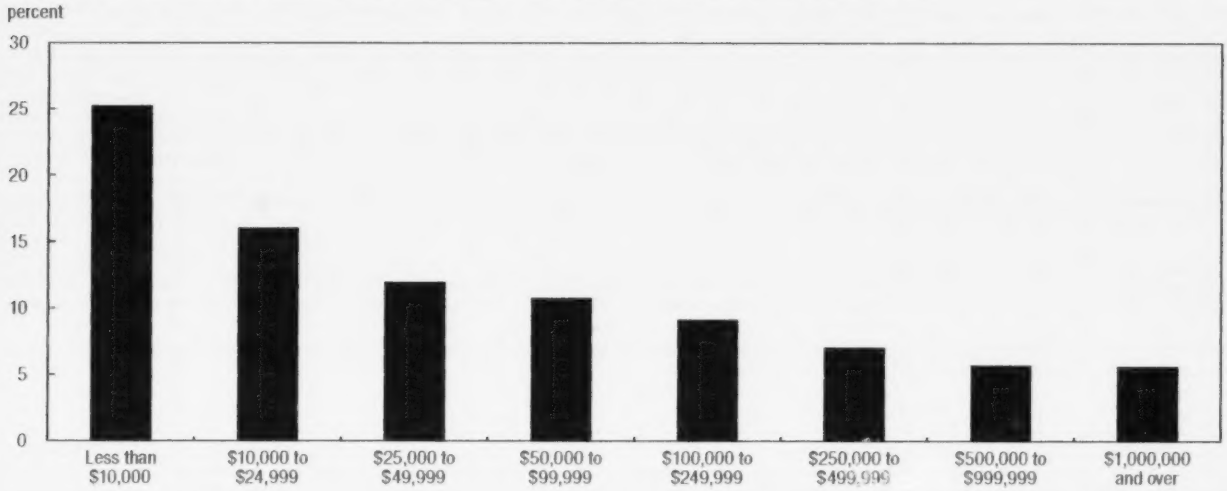
Direct marketing allows small farms to tap into niche markets

How a farm chooses to market its products depends on a variety of factors. A primary consideration is the scale of the operation. Large farms possess the scale of production that allows them to access more traditional marketing channels through contracts, storage facilities, processing plants, and integration.

Operators of smaller farms, in turn, have found other avenues to access markets.

One way small farms reach consumers is through direct marketing. The median sales for farms reporting direct marketing was $20,000, as farms with lower sales sold directly to consumers more often than farms with higher sales. In Canada, 25.2% of farms with sales less than $10,000 reported direct marketing, compared with 5.6% of farms with $1 million or more in sales (Chart 2).

Chart 2
Proportion of agricultural operations reporting direct marketing by receipts class, Canada, 2015



Source: Census of Agriculture (3438).

Horticulture leads the way in direct marketing

Participation in direct marketing varied by farm type. While beef cattle type farms represented the highest proportion of farms reporting direct marketing at 12.7%, those 3,121 farms represent just 8.7% of the total beef cattle farms in the country. The second most common direct marketing farm was fruit and tree nut type farms, which accounted for 12.1% (2,967 farms) of farms reporting direct marketing. They were followed by other vegetable and melon (excluding potato) type farms which represented 10.4% (2,552 farms) of farms reporting direct marketing. While farm type is based on the products that provide the majority of a farm operation's sales, the farm operator may directly market other types of products.

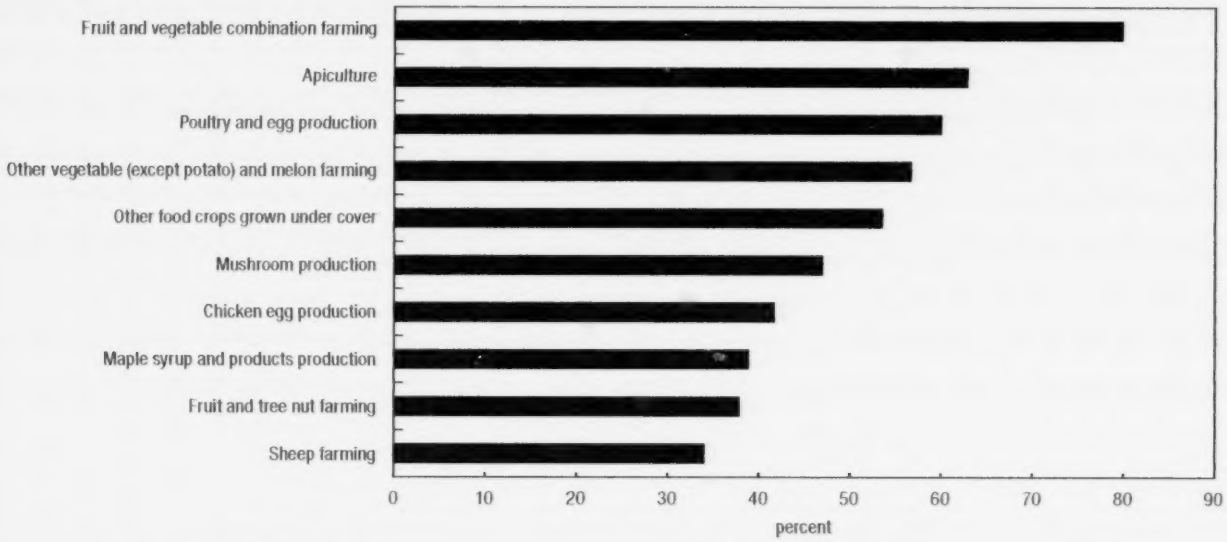
Proportionally, horticulture type farms were most likely to report direct marketing, and those farms had lower sales, on average, than similar farms that did not sell directly to consumers.

Fruit and vegetable combination type farms reported direct marketing most often, with 79.8% of operations of this type reporting the practice (Chart 3). These farms are more likely to be mixed garden farms than specialized fruit-only or vegetable-only type farms. The average sales for fruit-and-vegetable-combination type farms that reported direct marketing was $83,683 annually, compared with $246,011 for those that did not. Among the 590 fruit-and-vegetable-combination type farms that reported direct marketing in 2015, 99.3% sold unprocessed products, such as fresh vegetables, and 20.8% sold value-added products like jams and jellies. Of farms reporting direct marketing, 85.4% sold through farm gate sales, stands, kiosks, or U-pick, 43.1% through farmers' markets, 13.1% through Community Supported Agriculture (CSA), and 2.5% sold through other methods.

Apiculture (beekeeping) type farms had the second highest percentage of farms that sold directly to consumers, with 62.8% of farms reporting the practice (Chart 3). The average sales for beekeeping type farms that reported direct marketing was $120,736 annually, compared with $182,882 for those that did not. Of these 1,303 beekeeping farms, 98.1% sold unprocessed products such as honey, and almost 9 in 10 sold through farm gate sales, stands, kiosks, or U-pick.

Oilseed and grain type farms were least likely to report direct marketing. Soybean, corn, dry pea and bean, wheat, oilseed (except soybean), and other grain type farms each had less than 4.0% of farms reporting direct marketing.

Chart 3
Percentage of agricultural operations reporting direct marketing by selected operation type, Canada, 2015

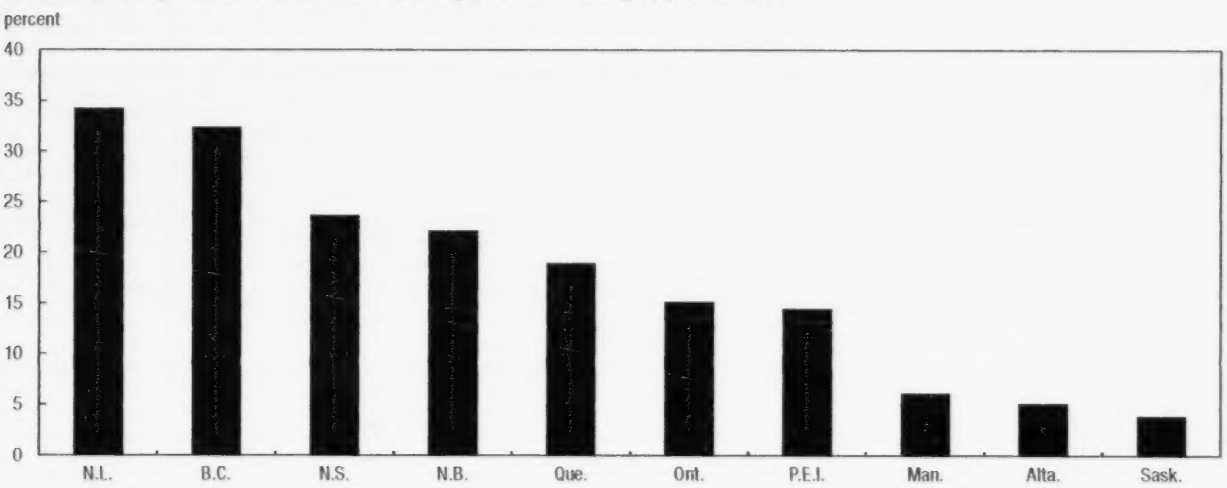


Source: Census of Agriculture (3438).

Direct marketing from coast to coast

Ontario accounted for the highest number of farms reporting direct marketing with 7,474 farms, or 30.5% of farms reporting the practice in the country. Proportionally however, direct marketing was most prevalent in provinces with the highest proportions of small farms. Newfoundland and Labrador, British Columbia, Nova Scotia, and New Brunswick, the provinces with the highest proportions of farms reporting less than $10,000 in sales, also had the highest proportions of farms selling directly to consumers (Chart 4).

Chart 4
Percentage of agricultural operations reporting direct marketing by province, 2015

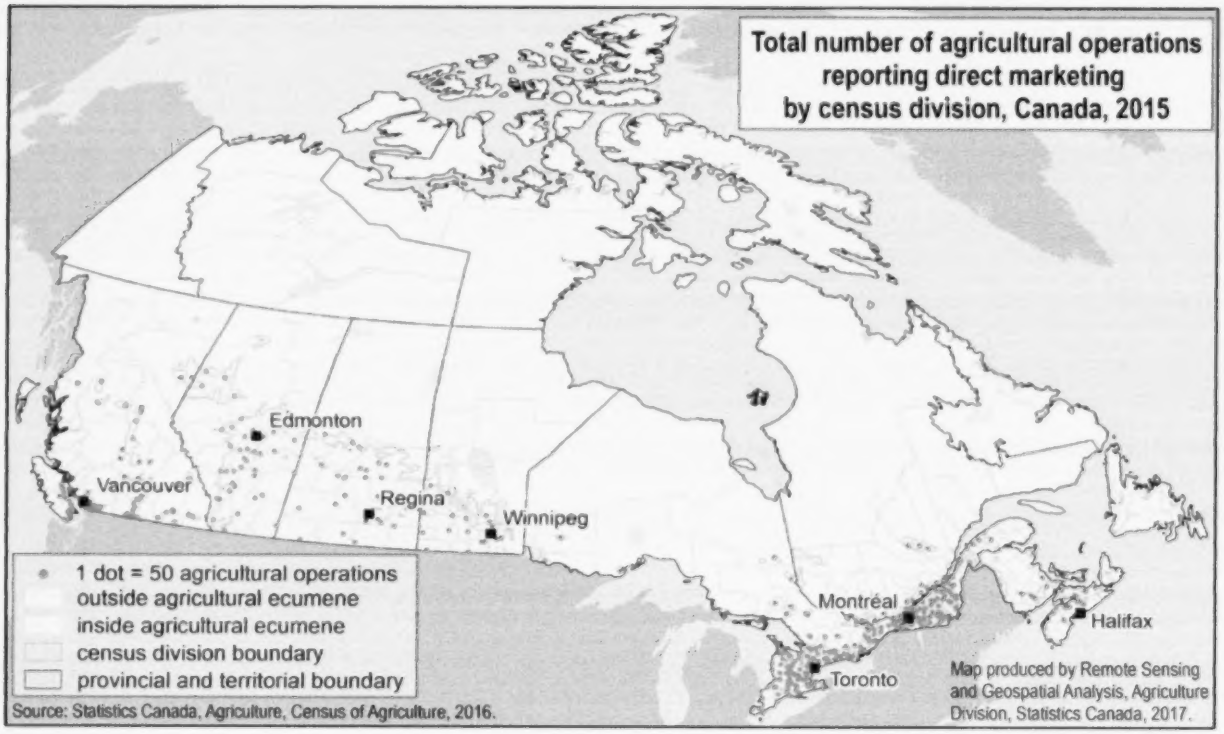


Source: CANSIM table 004-0244.

Quebec had the highest percentage of farms reporting direct marketing that sold through farm gate sales, stands, kiosks, or U-picks at 93.1%. The Atlantic Provinces, in turn, had the highest percentage of farms reporting direct marketing that sold through farmers' markets, with each of the four provinces reporting just over 30%. Prince Edward Island also accounted for the highest percentage of farms reporting direct marketing through Community Supported Agriculture (CSA) at 11.3%.

While direct marketing is concentrated around large urban centres, such as Toronto, Montreal and Vancouver, data also reveals that farms engaged in direct selling are found throughout the country (Map 1).

Map 1


Total number of agricultural operations reporting direct marketing by census division, Canada, 2015
Edmonton
Vancouver
Regina
Winnipeg
Montréal
Halifax
Toronto
1 dot = 50 agricultural operations
outside agricultural ecumene
inside agricultural ecumene
census division boundary
provincial and territorial boundary
Source: Statistics Canada, Agriculture, Census of Agriculture, 2016.
Map produced by Remote Sensing and Geospatial Analysis, Agriculture Division, Statistics Canada, 2017.

Organic farming: when old methods are new

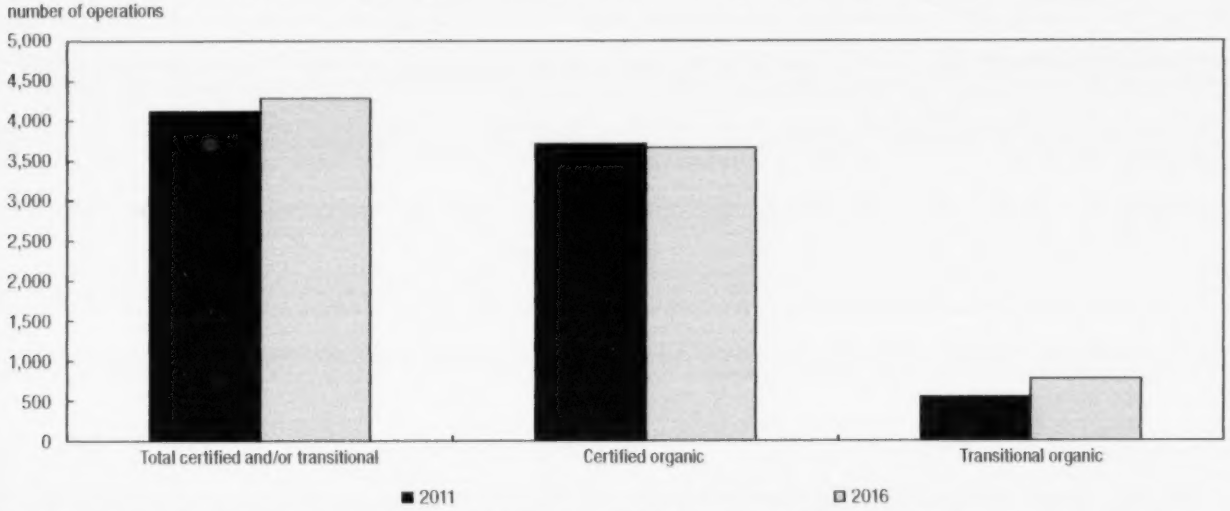
As consumer interest in organic products grows, Canadian farms are adapting their production methods to meet the market demand. According to the 2015 Nielsen Global Health and Wellness Report which polled 30,000 consumers from 60 countries throughout Asia-Pacific, Europe, Latin America, the Middle East, Africa and North America, 33% of global respondents reported that a product being organic was a very important consideration in their purchase decision (Nielsen, 2015).

What is an organic farm?

An organic farm is defined as a farm where organic agricultural products are being produced for sale. This includes operations that are certified or in the process of becoming certified by an organic certifying body.

Between 2011 and 2016, the number of farms reporting certified or transitional organic production increased by 4.1%, from 4,120 operations to 4,289. These farms represented 2.2% of all farms in Canada in 2016, compared with 2.0% in 2011. While the number of certified organic operations decreased by 50 farms, to 3,663 farms in 2016, the number of transitional organic farms increased by 226 farms, to 769 operations in 2016 (Chart 5).

Chart 5
Number of agricultural operations reporting certified and/or transitional organic production, Canada, 2011 and 2016



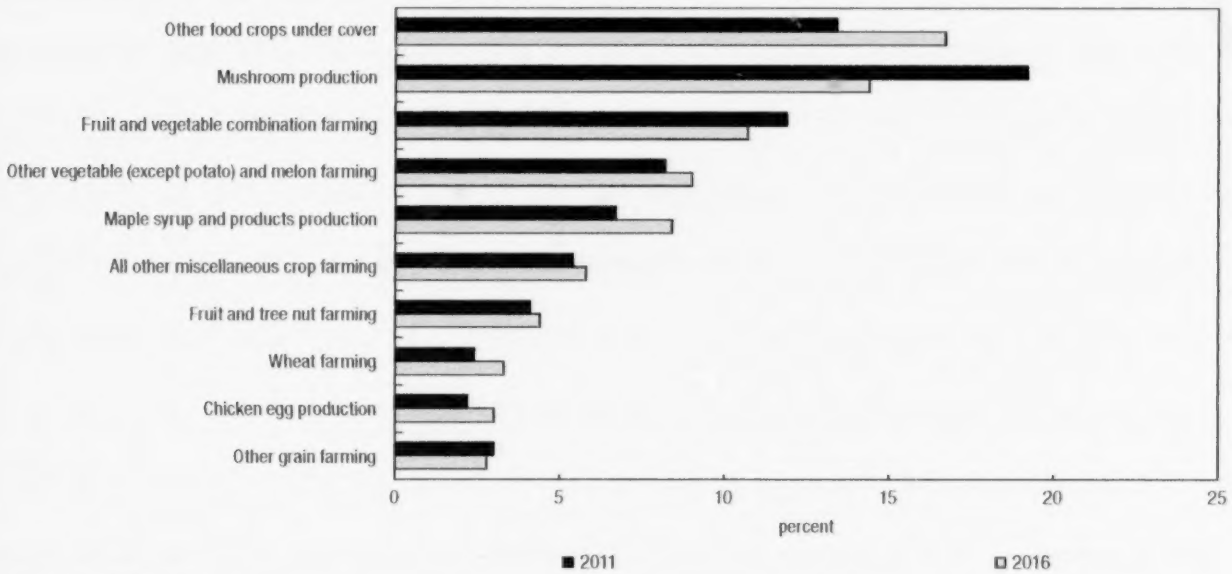
Note: As farms can report both certified and transitional organic status, the sum of certified and transitional operations can be more than total organic farms.
Source: CANSIM table 004-0211.

Horticulture is most likely to be organic

While oilseed and grain type farms represented the highest proportion of organic farms in Canada at 29.8%, those 1,278 farms accounted for just 2.0% of the total oilseed and grain farms in the country. When broken down as a proportion of farms by farm type, horticulture type farms had the highest percentage of farms reporting organic production.

In Canada, 16.7% of other food crop grown under cover (greenhouse vegetable) type farms produced organic products for sale (138 farms), overtaking mushroom type farms for the highest proportion of organic operations in 2016. Greenhouse vegetable type farms also accounted for the greatest increase in the proportion of organic farms, increasing from 13.4% of farms within the farm type in 2011, to 16.7% in 2016 (Chart 6).

Chart 6
Percentage of agricultural operations reporting organic production by selected operation type, Canada, 2016



Source: Census of Agriculture (3438).

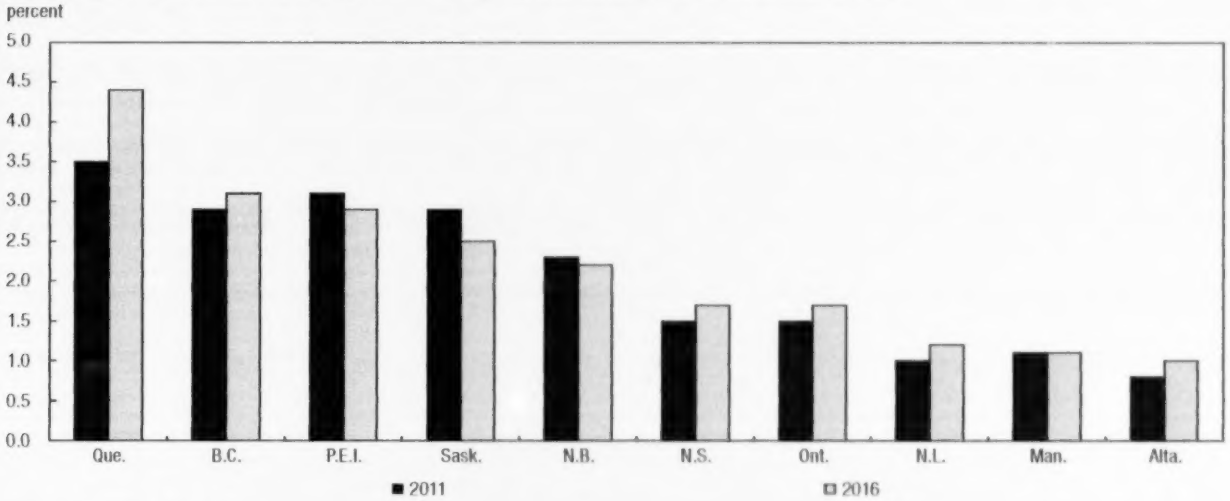
Quebec takes the lead in organic farming

Quebec had the highest number of organic farms in Canada in 2016, overtaking Saskatchewan which led in 2011. The number of organic farms increased by 22.3% in Quebec, from 1,037 farms in 2011 to 1,268 farms in 2016. Maple type farms, which increased by 86 operations, led the provincial increase. Relatively low barriers to certification, combined with increasing appeal for organic products from important export markets such as Japan, are likely enticing maple producers in the province to obtain organic certification (Starnes, 2015).

The number of organic farms in Saskatchewan fell by 17.4%, from 1,064 farms in 2011 to 879 farms in 2016. Saskatchewan had the biggest decrease in the country, driven largely by a 79-operation decrease among both oilseed and grain and other crop type farms. The decline was the result of several factors. Price volatility in the organic market, meant organic prices fell as a result of the 2008 to 2011 global recession. This combined with certification barriers, long transitional periods, and stronger conventional crop prices, all likely contributed to the decrease in organic operations in the province (Arnason, 2015).

When examined as a proportion of farms in the province, Quebec remained the province with the highest percentage of organic farms in 2016, with 4.4% of farms reporting the production of organic products for sale, double the national rate of 2.2% (Chart 7).

Chart 7
Percentage of operations reporting producing organic products by province, 2011 and 2016



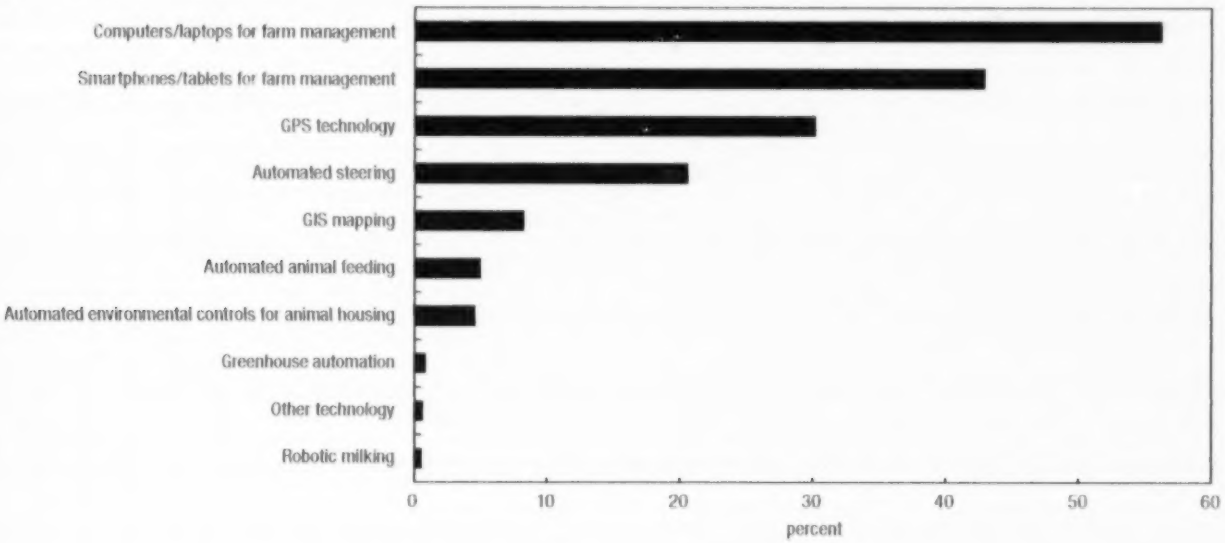
Source: Census of Agriculture (3438).

Farming the future today

Producers continue to integrate technology, mechanization and improved processes to their operations. These allow farms to create efficiency, achieve scale and maximize profitability. Farms are using data-driven technologies, such as GPS and GIS soil mapping, to bring increasing precision and accuracy to seeding, harvesting and input use. Technologies in the greenhouse and livestock sectors are advancing the world of farm automation at the push of a button.

In Canada, 66.3% of farms reported using technology on their operation. In 2015, 56.2% of operations used computers or laptops on their operation for farm management, while 42.9% of operations used smartphones or tablets for those tasks (Chart 8).

Chart 8
Percentage of agricultural operations that reported using technology by type, Canada, 2015

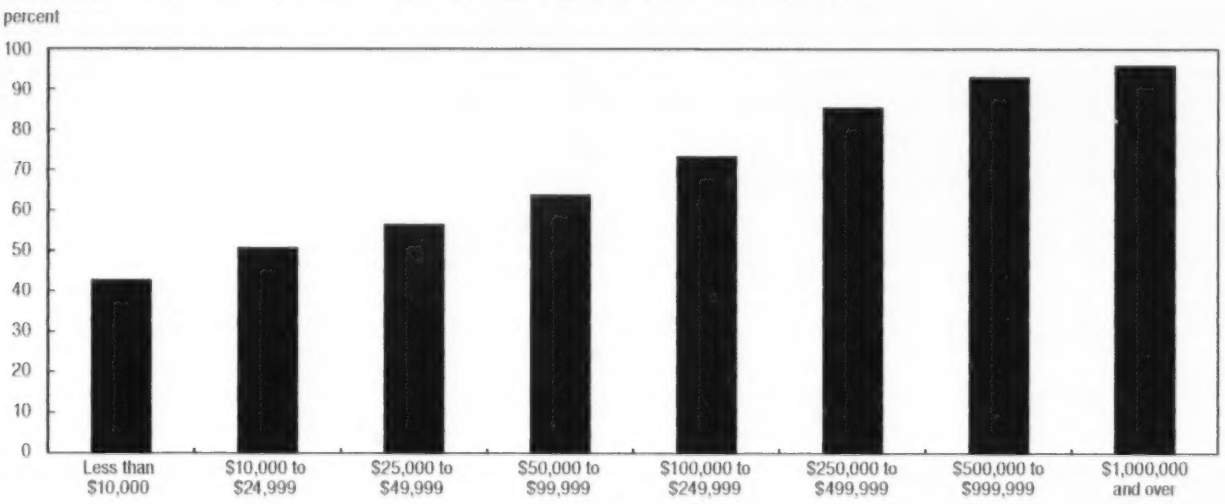


Source: Census of Agriculture (3438).

Larger farms are looking to gain through investment in technology

Larger farms are leveraging their size to invest in efficiency-generating technologies. The percentage of farms that reported using technology on their operation grew as sales increased. Of farms with sales of $1 million or higher, 95.9% reported using one of the technologies listed on the census, compared with 42.7% for farms with sales less than $10,000 (Chart 9).

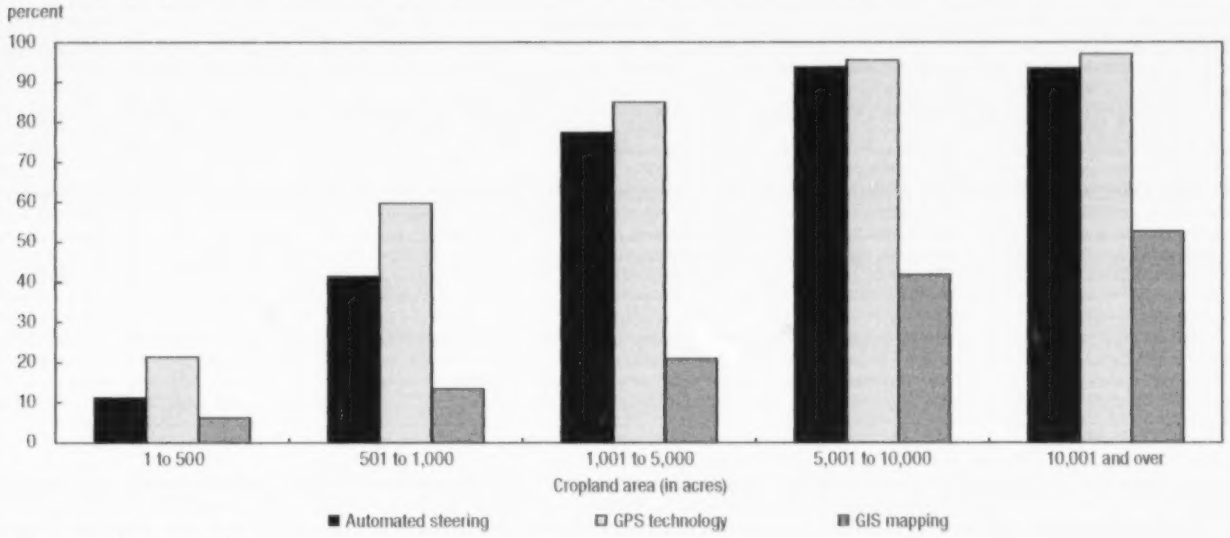
Chart 9
Percentage of agricultural operations reporting technology by receipts class, Canada, 2015



Source: Census of Agriculture (3438).

Overall, 48.6% of oilseed and grain type farms in Canada used automated steering, 62.5% reported GPS technology, and 15.8% used GIS mapping. However, the percentage of farms reporting these technologies increased as cropland acreage grew. Of farms that reported 10,000 acres or more of cropland, 93.6% used automated steering, 97.1% used GPS technology, and 52.7% used GIS mapping (Chart 10).

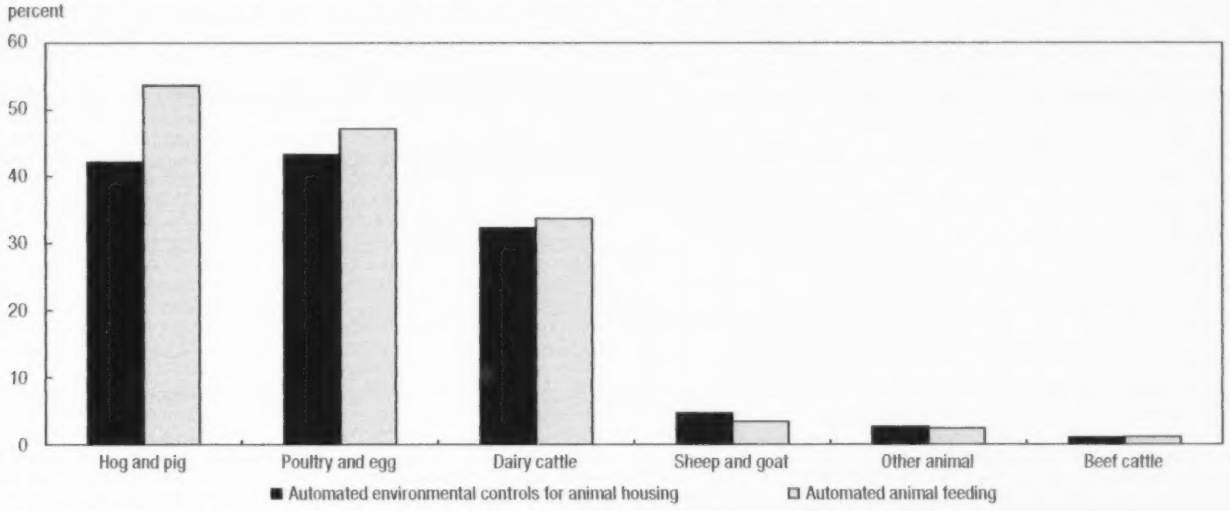
Chart 10
Percentage of agricultural operations reporting selected technology by cropland acreage, Canada, 2015



Source: Census of Agriculture (3438).

In Canada, 10.2% of livestock type farms used automated environmental controls for animal housing, and 11.1% used automated animal feeding. Hog and pig, and poultry and egg type farms had the highest percentage of farms reporting these technologies. In 2015, 43.3% of poultry and egg type farms reported the use of automated environmental controls for animal housing, and 53.6% of hog and pig farms reported the use of automated animal feeding (Chart 11).

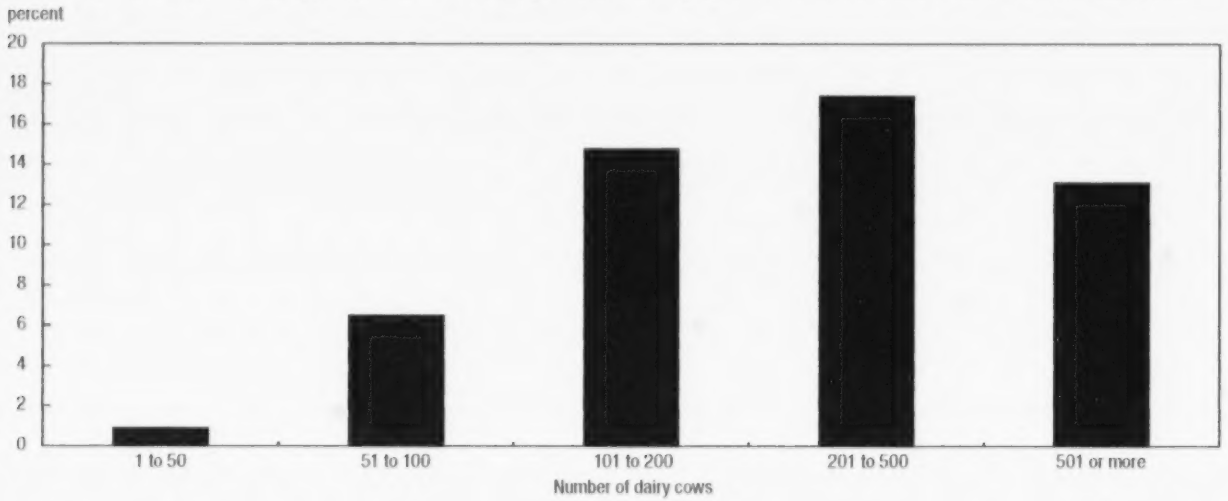
Chart 11
Percentage of livestock operations reporting selected technology by type, Canada, 2015



Source: Census of Agriculture (3438).

Among dairy and milk type farms, 8.9% reported robotic milking. However, the percentage of farms that reported robotic milking varied based on the number of milk cows reported. The percentage of farms reporting robotic milking increased as the number of milk cows increased, peaking at farms with between 201 and 500 milk cows, of which 17.4% reported the use robotic milking (Chart 12). With an average of one robotic milking system required for every 60 to 65 cows (Haan et al., 2012), the initial investment costs required to service a large number cows, combined with the additional management burden required to keep production running smoothly, may outweigh the benefits of the technology for some large operations.

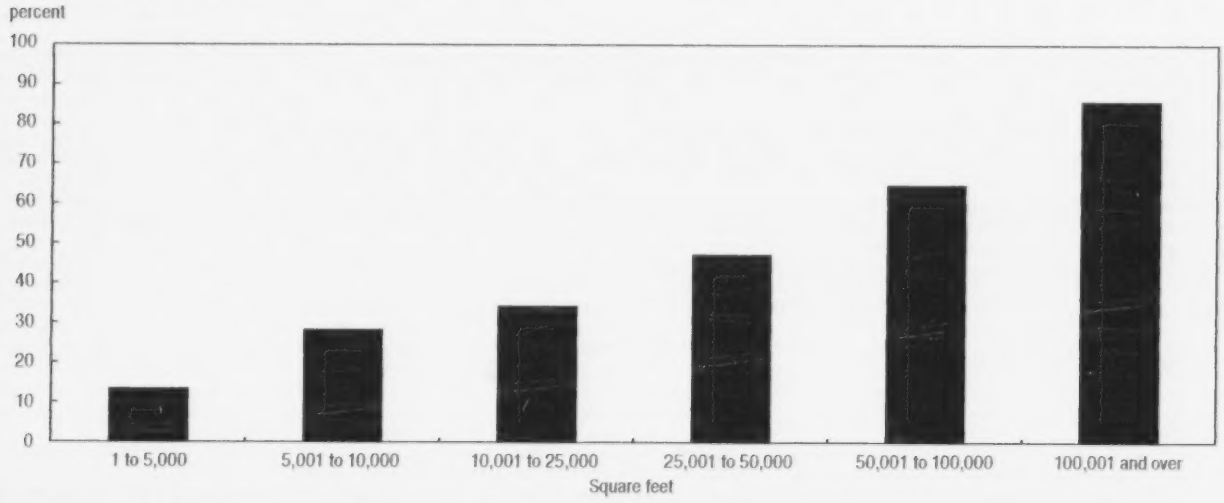
Chart 12
Percentage of dairy and milk type operations reporting robotic milking by size class of number of milk cows, Canada, 2015



Source: Census of Agriculture (3438).

In Canada, 18.9% of greenhouse, nursery and floriculture type farms reported using greenhouse automation. As with other types of farms, the use of the technology increased as the size of the operation increased. Of greenhouses that reported more than 100,000 square feet under glass, 85.8% reported the use of greenhouse automation, compared with 13.3% for operations with less than 5,000 square feet (Chart 13).

Chart 13
Percentage of greenhouse, nursery and floriculture type operations using greenhouse automation by size class of area under glass, Canada, 2015

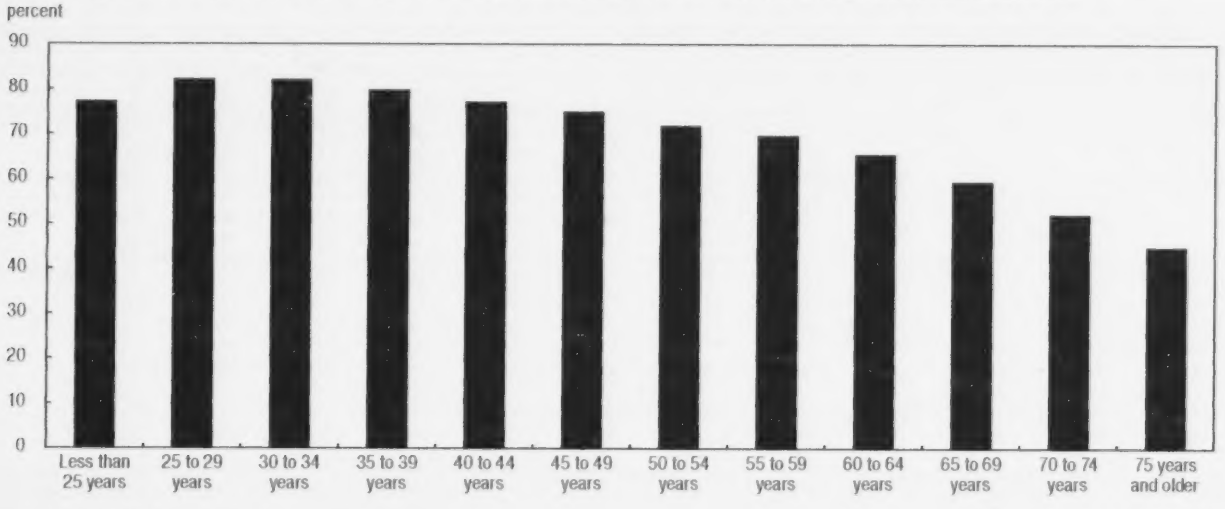


Source: Census of Agriculture (3438).

Younger operators more likely to take advantage of technology

Younger operators used technology more than older operators. The percentage of operators on farms that reported using technology decreased as the age of the operator increased. In 2015, 57.4% of operators 60 years and over were on farms that reported the use of technology, compared with 80.7% for operators under the age of 40 (Chart 14).

Chart 14
Percentage of farm operators reporting technology in the year prior to the census by age group, Canada, 2016



Source: Census of Agriculture (3438).

Gaining efficiency with bigger tractors and better practices

Farms are increasingly using larger and more advanced equipment to manage costs and improve efficiency. Larger equipment allows fieldwork to be completed faster, while advances in equipment and production practices allow more precise seeding and input application. The value of farm machinery and equipment in Canada totalled $53.9 billion in 2016, increasing by 15.4% since 2011 (in 2016 constant dollars). This represented an average total value of machinery per farm of $278,405 in 2016, up 22.7% since 2011.

Tractors increased their share of the total value of machinery from 33.9% in 2011, to 34.6% in 2016. The prevalence of bigger tractors increased, with the number of tractors over 149 p.t.o. hp increasing by 9.3% since 2011 to 58,414 in 2016. The total value of those tractors increased by 50.0% over the same period. Tractors over 149 p.t.o. hp represented a 50.3% share of the total value of tractors in 2016, up from 39.5% in 2011 (Table 1).

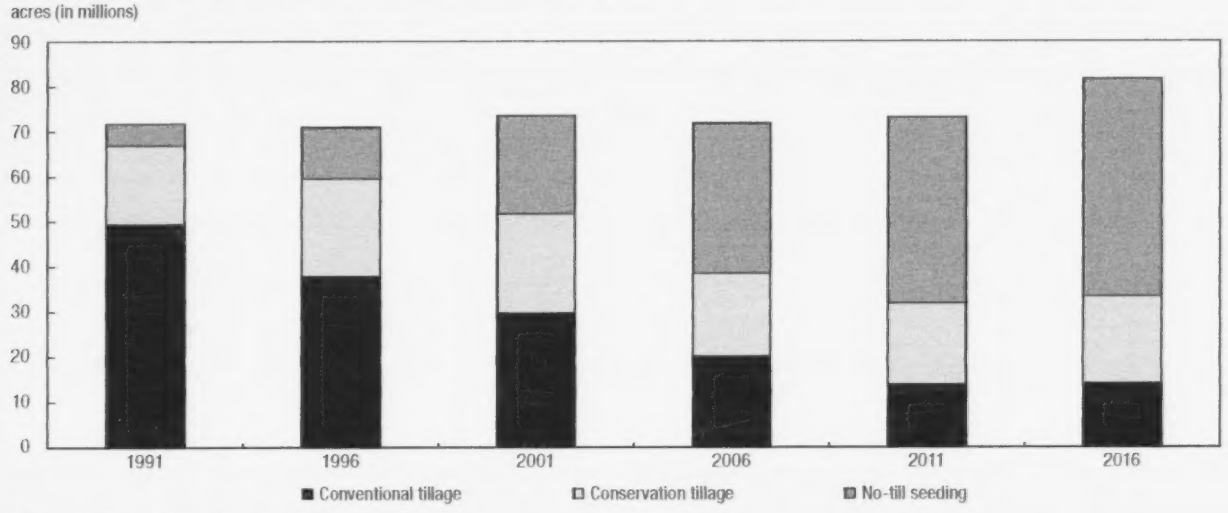
Table 1
Value of tractors (in 2016 constant dollars) by category and percent of total , Canada, 2011 and 2016

	Value of tractors				
	2011	2016		2011	2016
Category	dollars (billions)		% change	percent of total[1]	
Under 60 p.t.o. hp	2.1	2.1	2.3	13.3	11.5
60 to 149 p.t.o. hp	7.5	7.1	-4.6	47.3	38.2
Over 149 p.t.o. hp	6.2	9.4	50.0	39.5	50.3
Total	**15.8**	**18.6**	**17.9**	**100.0**	**100.0**

1. Totals may not equal 100% due to rounding.
Note: p.t.o. hp: power take-off horsepower
Source: CANSIM table 004-0234.

Farmers are also innovating by adopting practices that reduce costs and increase efficiency. No-till seeding is one of these practices, and involves seeding directly into minimally disturbed soil. This translates into fewer passes over the field, as farmers plant seed without the use of primary and secondary tillage practices, thereby reducing fuel and labour costs. Another benefit is improved soil structure, which increases water infiltration and reduces erosion. No-till seeding continued to grow in 2016, with an increase of 16.8% across Canada since 2011, to 48.2 million acres (Chart 15). No-till seeding is not possible with all crop types or field conditions.

Chart 15
Total area tilled by tillage practices, Canada, 1991 to 2016



Sources: CANSIM tables 004-0010 and 004-0205.

Farmers harvest the sun for more than growing crops

Farmers are using on-farm resources to capitalize on opportunities available through renewable energy generation. Renewable energy producing systems can be a way to cut costs or to tap into additional non-farming revenue.

In Canada, 5.3% of farms reported having a renewable energy producing system on their operation (irrespective of ownership). Of these farms, 85.0% had solar panels and 15.7% had wind turbines (Table 2).

Table 2
Number and percentage of agricultural operations reporting renewable energy by type of renewable energy, Canada, 2015

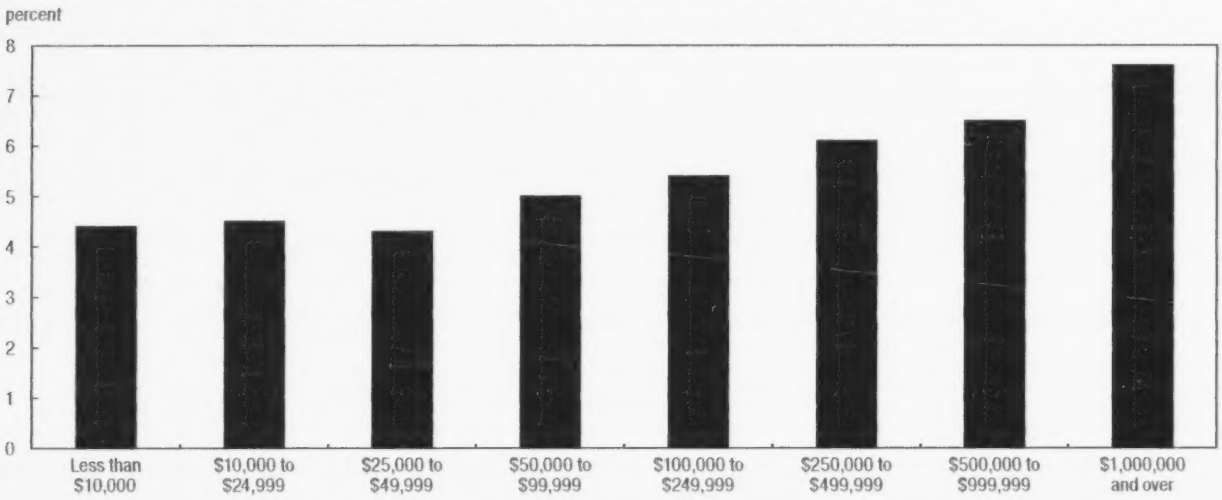
Type of renewable energy	Number of agricultural operations[1]	Percent of agricultural operations reporting renewable energy
Solar panels	8,658	85.0
Wind turbines	1,597	15.7
Anaerobic biodigester	63	0.6
Biodiesel production systems	16	0.2
Hydroelectric power generator	60	0.6
Other renewable energy	518	5.1

1. As operations can have multiple systems on their operation, the sum of the system types reported can be more than total farms reporting a renewable energy.
Source: Census of Agriculture (3438).

Large farms are leveraging their size to capitalize on renewables

The percentage of farms reporting a renewable energy producing system on their operation grew as sales increased. Of farms with sales of $1 million or higher, 7.6% reported a renewable energy producing system, compared with 4.4% of farms with sales less than $10,000 (Chart 16).

Chart 16
Percentage of agricultural operations reporting renewable energy by receipts class, Canada, 2015



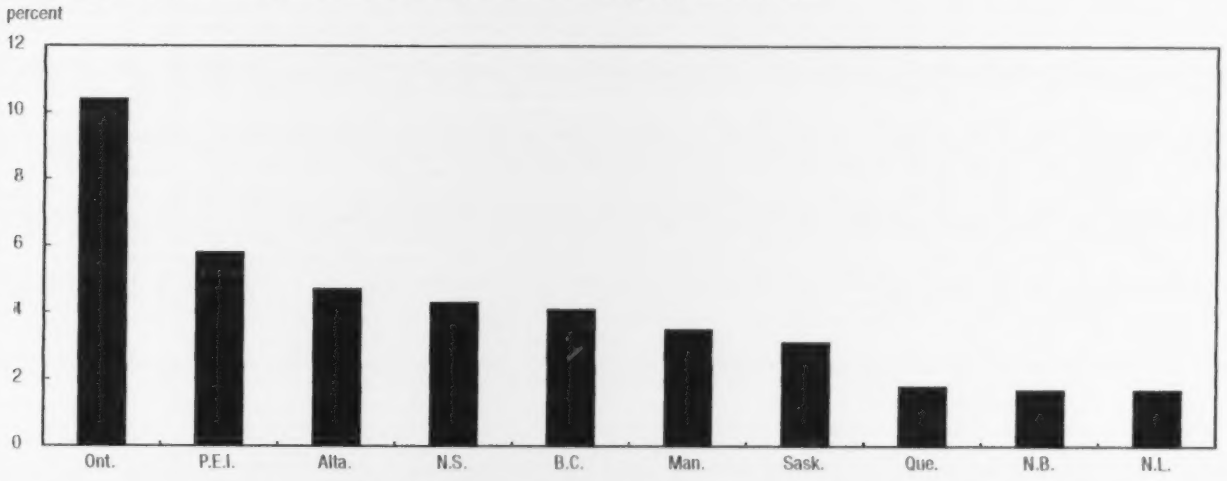
Source: Census of Agriculture (3438).

Ontario leads in renewable energy

Ontario had the highest percentage of farms with renewable energy producing systems on their operations at 10.4% (Chart 17). Of the 5,180 farms with renewable energy producing systems in Ontario, 85.5% had solar panels and 17.5% had wind turbines. Prince Edward Island had the second highest percentage of farms with renewable energy producing systems at 5.8%, and the highest percentage of farms reporting with wind turbines at 42.3%.

Among farms that reported renewable energy producing systems, Prairie Provinces had the highest percentage of farms with solar panels. The percentage of farms with renewable energy producing systems that had solar panels was 91.3% in Alberta, 89.0% in Saskatchewan, and 86.1% in Manitoba.

Chart 17
Percentage of agricultural operations reporting renewable energy by province, 2015



Source: Census of Agriculture (3438).

External References

Nielsen. (2015, January). Global Health and Wellness Report. Retrieved March 9, 2017 from www.nielsen.com

Starnes, R. (2015, September). Canadian Organic Maple Company: the Sweet Smell of Success. Retrieved March 14th, 2017 from http://exportwise.ca/canadian-organic-maple-company-sweet-success/

Arnason, R. (2015, January). Consumers want organic, so why are farmers wary? Retrieved March 14th, 2017 from http://www.producer.com/2015/01/consumers-want-organic-so-why-are-farmers-wary/

Haan, M., Stuart, D., Schewe, B. (2012). Challenges and benefits of adopting robotic milking on Michigan dairy farms. Retrieved March 29th, 2017 from https://msu.edu/~mdr/vol17no3/challenges.html